411 with the grain of the wood, and these point to the possibility that the casing may be concealing some defect in the stave. There is, however, nothing which prevents the casing on this bow from being, at the same time, an instrument of magic and a practical means of reinforcement.

411 The bow string, which consists of two, three, or more strips of skin
284 (usually deerskin),[1] is often twice the length of the bow (see figs. 90, 95
● [283] and 96). One end of the string is fixed with a hard knot to one of the bow ends fig. 93 a). This end of the bow is pressed on the ground, and then the stave is given a slight bend — with the help of the knee — and the string is wound on to the upper bow end, in the way seen in figs. 92 and 93 b. The spare end of the string is then tied along the outer side of the bow, as seen in fig. 90. This figure shows a comparatively well-made Choroti bow, without pared-down string-holds, or windings for holding the string in position, and with the string put on in the proper way. On the other hand, fig. 91 shows a bow with string-hold windings and a string badly put on. In shooting, the Choroti generally hold the bow so that the end wound with the loose end of the string points downwards (figs. 90, 91 and 96).

411 Even when the bow is »at rest» (that is to say, when the string is not much tightened), the middle part of the string, owing to the said curving of the stave ends, will be at a certain distance from the stave, which makes it possible to use the bow without first tightening the string. But if there is time for shortening the string, this is almost always done. The Choroti shorten and lengthen the bow string, in the same way as is done by the Chiriguano on their bows (see p. 208).

For the protection of the wrist from the blow of the string, the Choroti sometimes use broad wrist guards of leather.[2]

The arrows used by the Choroti are, as a rule, tipped with some hard,
[177] heavy wood (figs. 97—103), but iron arrow-heads (figs. 104—106) are more and more coming into use. Occasionally, the fore end of a wooden arrow-head may be fixed into the marrow cavity of a sharpened piece of bone. Such bone-tipped arrows are, however, very rarely met with among the Choroti; for my own part, I failed to acquire more than a single

[1] The Choroti also use bow strings made of caraguatá fibre; Nordenskiöld (11), p. 36. I never myself, however, saw any bow strings of that kind.
[2] Nordenskiöld (11), p. 43.

[text continues on p. 94]

1: Rosen E-5 (1901-1902) 1924 SK6 Choroti SK6

thread is wound on and fastened. Probably this thread,[1] was used for securing the bait so that it should not slip off the barbless hook. The line, which consists of three-ply yarn, is 4.4 m. long. [226]

When a fish has been caught, it is killed with small, round-sectioned clubs of some hard and heavy kind of wood (fig. 120), and then strung on a cord, which, by means of a wooden needle (fig. 121), is threaded through the head of the fish, being passed through its eyes. The fish-festooned cord is carried round the fisherman's waist. This is a safe and handy way of carrying the catch whilst continuing fishing operations, swimming or wading. When a collected catch of fish is to be transported [286]

Fig. 117. Enlargement of the net in fig. 116. 2/3.

home to the village, the fish needle and cord also come in very useful. The implement here shown is from the Toba, as the Choroti specimen which I brought home (Riksm. 03. 3. 243) is now lost. The needle in the implement here reproduced probably consists of palo mataco, or quebracho, and has a length of 380 cm and a diameter of 0.5 cm. The cord, however, tapers towards the ends, its extreme points being only a few millimetres in thickness. One end of the cord is bent back so as to form a loop. Through this loop, and through the eye of the needle, a thinner caraguatá string has been passed, several turns, and with this string the loop has been wound, in the way seen in the picture. The specimen here shown is meant for carrying large-sized fish, but these implements are also to be found of much slenderer dimensions. [824] [283]

[1] I have no notes concerning the purpose of this thread.

1: Rosen E-5 (1901-1902) 1924 SK6 Choroti SK6

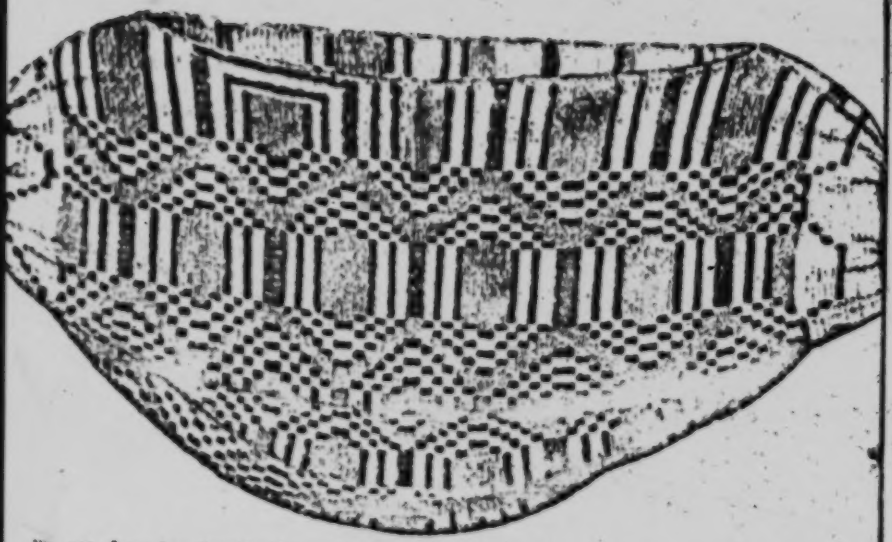

Fig. 133. Large bag, knitted of brown, black and yellowish white (natural colour) caraguatá fibre yarn. Choroti. Gran Chaco, Bolivia. 1/6. Rikssm. 03. 3. 134.

smaller caraguatá bags of the shape seen in figs. 137 and 138. These bags are carried by a string or narrow strap laid over the shoulder (see the man with a bow, fig. 96) or tied to the belt, and in them are kept a variety of articles that the Choroti men always like to have about them, such as fire-drilling sticks, tinder boxes, awls for blood-letting, colours for painting of the face, etc.

The caraguatá yarn is spun, without the aid of a spindle, only by twisting the fibres (of Bromelia serra) against the thigh with the flat of the hand. Some of the yarn is dyed with vegetable dyestuffs in order to produce variegated patterns in the knitting (see figs. 135—139). For the knitting, eyed needles of hard wood (fig. 140) are used. Similar needles of wood or bone are also used for sewing. Among the Choroti I have seen men's bags which had been knitted of woollen-yarn with long cactus spines, used as knitting needles (fig. 141). The woollen-yarn bag here reproduced is ornamented with red, brown and grey

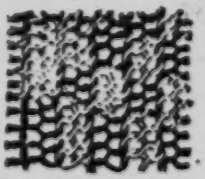

Fig. 136. Enlargement of the knitting of the bag in fig. 133.

1: Rosen E-5 (1901-1902) 1924 SK6 Choroti SK6

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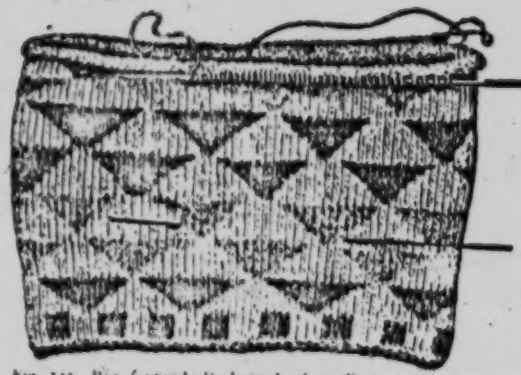

Fig. 141. Bag (unfinished), knitted of woollen yarn, with two cactus spines used as knitting needles. The pattern consists of red, brown and grey triangles and squares on a greyish white ground. Choroti, Gran Chaco, Bolivia. 1/3. Riksm. 03. 3. 143.

Fig. 142. Distaff, with wooden spindle and a spherical whorl consisting of the hard shell of a fruit. Left-spun cotton yarn is wound on the spindle, near its middle. Choroti, Gran Chaco, Bolivia. 1/3. Riksm. 10. 3. 51.

Fig. 143. Distaff, with wooden spindle, and a plano-convex whorl of bone. Choroti, Gran Chaco, Bolivia. 1/3. Riksm. 03. 3. 140.

triangles and squares on greyish-white ground. It is probable that the Choroti have learnt the art of knitting through having been in contact with more cultured tribes.

283
[231]

From their herds of sheep the Choroti obtain all the wool they need for manufacturing mantles, loin cloths, ponchos, fillets, bags, etc. Wool, as well as cotton, is spun with distaffs of the Bakairi type[1] (figs. 142 and 143). The spindles of the distaffs are of wood, with a small knob at the top end for fixing the wool. The spindle is always thinnest at the upper end, and increases in thickness downwards, attaining its greatest thickness not far from its bottom end. The spindle whorls consist of various materials, such as fruit rinds, bone, earthenware, etc. I have even obtained a Choroti distaff with a stone whorl (Riksm. 10. 3. 50), although this is a material which is extremely rare on the

[1] For South American spinning implements and their classification see Frisius and Nordenskiöld (1). 10[0]. — *v. Koiss.* II.

1: Rosen E-5 (1901-1902) 1924 SK6 Choroti SK6

283 Chaco, a circumstance I have pointed out in the foregoing. At its thickest part, the diameter of the spindle should be somewhat larger than the diameter of the hole through the whorl. The thinner end of the spindle is passed through this hole, and the whorl is then slid downwards until it gets fixed on account of the thickness of the spindle (see fig. 143). If the hole has happened to have been made too large, so that the whorl would slip off, the thickness of the spindle immediately below the whorl is increased by the application of a heavily waxed binding (see fig. 142).

Fig. 144. Knife-like weaving implement (batten) of hard wood Choroti. Tiran Chaco. Bolivia. 9.9. Riksm. 10. 3. 91.

286 Personally I have not seen the Choroti do any weaving, but from this tribe Nordenskiöld has described a very primitive method of fillet weaving: »For a loom, the woman used her own body; the fillet she was weaving was fastened to her big toe, and her hand she used as a batten. In this way she was weaving. the fillet without using any other implement than her extremities.»[1]

For all that, the Chorotis do possess weaving implements, which, among other things, is evident from the weaving batten reproduced in fig. 144. It is carved in one piece out of some hard, heavy wood. The transverse section of the handle is oval, and the blade has two rounded edges.

283 The Choroti make excellent ropes of bast (fig. 145), by twining. One such rope, which I bartered off them, is 11.74 metres in length. At one end of it there is a running noose, and it has probably been used as a lasso.

412 439 At the time when I visited the Chaco, iron was still of such rarity that it was but seldom I saw an iron knife among the Choroti. We had brought with us, as articles for bartering, long, Argentine knives, and with them the Indians were highly delighted. These knives were not used by the Choroti for carving wood with, but principally as carving instruments in cutting up meat.

412 The Choroti knife, which is reproduced in fig. 146, is a very primitive tool, with a one-edged blade, about 1.5 mm thick, of untempered sheet-iron. The upper part of the blade is wedged into a partly cleft wooden handle, which is covered

[1] Nordenskiöld (13), p. 111.

[should be Choroti. -Analyst]

1: Rosen E-5 (1901-1902) 1924 SK6 Choroti SK6

with the tail skin of a lizard. The blade and handle form an obtuse angle, and the edge has been ground on the outer side of the angle. This peculiar shape of knife corresponds to the shape of wooden knives that have been found in ancient Indian graves on Puna de Jujuy and in Quebrada del Toro.[1]

Fig. 145. Rope, of bast. Choroti. Gran Chaco. Bolivia. 1/1. Riksm. 03. 3. 244.

Fig. 146. Knife with one-edged blade of soft iron, and handle of wood, covered with lizard skin. Choroti. Gran Chaco. Bolivia. 1/1. Riksm. 03. 3. 189.

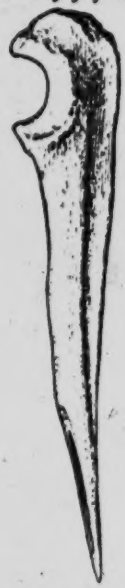

Fig. 147. Awl, consisting of the right ulna of some large feline, probably puma. Choroti. Gran Chaco. Bolivia. 1/1. Riksm. 03. 3. 183.

The Choroti also use wooden knives, resembling broad-bladed chisels.[2] Knives of this shape, which the Choroti now also make of iron, are principally used for cutting up fish, or for opening and dividing pumpkins, water melons, and other kinds of fruit. For cutting up meat, sharp-edged cane splinters, or — and nowadays most generally — iron knives, are used. As I have previously mentioned, the Choroti also use the sharp-toothed jawbones of the palometa fish (Serrosalmo sp.), as knives for hair-cutting, fig. 84.

[1] See, for example, von Rosen (10), figs. 59, 127 131.
[2] Nordenskiöld (11), figs. 12 and 13.

2: Nordenskiöld E-5 (1908-1909)1919
SK6 Choroti SK6
Ashluslay SK5

make the throw with the right hand alone, leaving the left free to steer or direct the boat.»

In the mountainous districts and on the Peruvian coast it was in part no doubt the lack of wood suitable for making bows that made this a rare weapon, but also in part the advantage of having the left hand free while using the throwing stick.

The bow (Fig. 4) that is used by the Indians dealt with here, is very poor in comparison with the bows used by most of the Indians inhabiting N.E. Bolivia. The transverse section shows a very varying form. The two ends of the bow are sharpened to a point, and are not provided with notches to hold the string. Bows of this sort, without notches, seem to belong to a very old cultural phase in S. America, for we only find them in the extreme south, and among a small number of very primitive peoples in Bolivia and Brazil.

PATER SCHMIDT mentions the following tribes that have bows ending in a simple point without notches for the string: Botokudo, Bugre, Chamacoco, Sapuki, Mataco, Toba, Angaité, Payaguá, Mbayá (Kadiuéo), Siriono, Pampas Indians, Miraña, Yauaperi and Uaŝmiri[1])

A few tribes have very indistinct notches at the end of the bow.

To the tribes enumerated by PATER SCHMIDT I can add, on the basis of archaeological material, the Indians in the Puna de Jujuy in Argentina[2]).

The bow-strings of the Choroti and Ashluslay Indians are made partly out of caraguatá fibres, partly out of strips of skin. Bowstrings of animal material are only found among the Indians in southern S. America as far north as the Chaco. (Map 2). In tropical S. America such bow-strings are unpractical and rare. Bow-strings of tendons or strips of skin

[1]) PATER SCHMIDT, p. 1033.

[2]) LEHMANN-NITSCHE (1) Pl. 2, fig. 3; pl. 3, fig. 16.

2: Nordenskiöld E-5 (1908-1909)1919
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Ashluslay SK5

XXV.

Miscellaneous Handicrafts.

The manufacture of rope and string and the spinning of yarn.

In conjunction with FRÖDIN I published a short time ago a work on the twisting and spinning of yarn in S. America. Those who are interested in these branches of Indian handicrafts I beg to refer to this work.

We there showed that, broadly speaking, two methods of spinning can be distinguished in S. America. These we called the Bakaïrí and the Bororó methods. We indicated also the occurrence of some varieties of these methods.

We described the spindle in use among the Bakaïrí as follows: — The typical Bakaïrí spindle is characterized by a spindle rod, the lower end of which is thicker and which is more or less truncated. As a rule it is not very carefully made. The whorl is put onto the rod from above and, consequently, cannot slip off when the spindle is held in a vertical position. The whorl-disc as a rule is near the thick, lower end. The upper end is provided with a slit or a hook, or it may be quite smooth.

We characterized the Bororó spindle as follows: — The Bororó type is characterized by its carefully carved and polished rod being spool-shaped. It is usually made of black palm-wood, so-called «Chonta». The spinning-whorl is generally very near one end of the rod and is put on the rod from below. As this spindle is always employed in a more

2: Nordenskiöld E-5 (1908-1909)1919
SK6 Choroti SK6
Ashluslay SK5

or less horizontal position, the rod has no need of a thicker end, like that of the Bakaïrí spindle, to prevent the slipping off of the whorl.

As might be expected in this method of spinning, this type of spindle is never, as is often the case with the Bakaïrí spindles, provided with hooks, knobs, etc. at one end.

The Choroti and Ashluslay have typical Bakaïrí spindles which are always provided with knobs at the upper end. On Map 35 I have indicated the distribution of these spindles in accordance with the work of FRÖDIN and myself.

Spindles of the Bakaïrí type are met with among the following tribes:

(28) Bakaïrí, (28) Kamayurá, (28) Mehinakú, (28) Aukuku, (28) Nahuquá, (28) Suyá, (28) Trumaí, (28) Kustenaú, (28) Auetó, (77) Tapirapé(?), (20) Paressi-Kabiši, (15) Kayapó, (13) Karajà, (50) Šavajé, (4) Chiriguano, (21) Cainguá, (8) Lengua, (12) Mbayá, (75) Angaité, (75) Sanapana, (3) Tapiete; (5) Chané, (6) Mataco, (1) Choroti, (2) Ashluslay, (16) Guató, (23) Churápa, (41) Guarayú, (Pauserna), (38) Tupinambá (55) Kalina, (31) Ojana and Trio, (47) Patamona, (47) Makusi, (47) Arecuna, (47) Wapischana, (78) Caribs of Trinidad, (79) Yekuaná, (80) Guaiqueri, (81) Indians on the coast of Guayana (82) Arawaks on the Saramacca, (36) Ijca, (36) Köggaba, (35) Chimila, (37) Motilon, (54) Guahibo, (68) Omagua, (86) Yahua, (69) Ipurina, (70) Piro, (71) Sipibo, (46) Conibo, (72) Atsahuaca, (73) Cháma, (18) Quichua, (19) Aymara, (26) Tehuelche, (7) Toba, (87) Mestizos in N. Argentina, (88) Indians of Tacna, (74) Tamanaco and (89) Indians on the Calilegúa.

In the course of archaeological excavations spindles of the Bakaïrí type have been discovered in the temple of the Sun-maiden at (A) Pachacamac on the coast of Peru, in the (D) Puna de Jujuy and in the (E) Diaguita district of N Argentina.

We see that the Bakaïrí spindles are widely distributed in S. America. In all likelihood this type of spindle came

2: Nordenskiöld E-5 (1908-1909)1919
SK6 Choroti SK6
Ashluslay SK5

originally from the mountain area of civilization, as FRÖDIN and myself have endeavoured to show. I shall return to this problem later on.

The spindles of the Choroti and Ashluslay are, as was mentioned, provided at the upper end with a knob round which the wool to be spun is fastened. This invention does not seem to be a product of the mountain civilization, but to have been one of the few elements of civilization which the Indians of the Chaco have received from the northern and western parts of S. America. Probably it came to the Chaco with the Guarani Indians, since the Arawaks at Mojos north of the Chaco have spindles of the Bororó type. It is indicated on the map which tribes in S. America have spindles of this kind. There are some S. American tribes whose spindles are provided with a hook instead of a knob at the upper end.

Sewing, or the use of the eyed needle.

The Indians of the Chaco have plainly learnt the use of the eyed needle from people of the the n ountain civilization. RIVET and VERNEAU[1]) have given a summary of the places where eyed needles have been found in archaeological excavations. From this it appears that, previous to its introduction by the whites, the eyed needle in America had a markedly western distribution. (Map 36). RIVET and VERNEAU mention the following places where metal needles have been found: — Neighbourhood of Cañaris, Ecuador, Piura, Chuquitanta, Marquez, Ancon, Paumalca (valle de Chiclayo), Trujillo, Huadquiña and Choquequirao in Peru (K, A), (I) Tiahuanaco, (I) Titicaca Island, (G) Queara, (Z) Tocarji and (Z) Asnapújio[2]) in Bolivia, (D) Casabindo, (E) Santa Maria, (E) La Loma (not far from Puerta del Belen) in Argentina. Rivet and VERNEAU[3]) quote, furthermore the following places for bone needles: — (L) Cañar (Ecuador), (E) La Paya (N.

[1]) (4) p. 284.
[2]) Only a few of these places are shown on the map.
[3]) (4) p. 252.

2: Nordenskiöld E-5 (1908-1909) 1919
SK6 Choroti SK6
Ashluslay SK5

It is also used by the Tsirakua of the northern Chaco in Caraguatá mantles and, no doubt, belongs to the elements of culture which the Indians of the Chaco received from the north or east.

In all likelihood techniques 4, 5, and 6 were found among the Mbayá in the 18 th century. SÁNCHEZ LABRADOR[1]) writes as follows of bags in this tribe: — «Hay unas de anillos ú ojos grandes, y otras de pequeños y algunas del todo cerradas.»

The existence in the Chaco of so many kinds of knitting is probably connected with the cultural influence from the area of civilization in western S. America. Proof of this can however, only be adduced after study of the specimens of the kinds of work found there. I am afraid that plain specimens of knitting, not possessing aesthetic value, are not always brought up to the light at the excavations in the coast lands of Peru. On this account it is important that future expeditions should collect such material in those parts. The plundered excavation areas must certainly have still a great deal to offer in this respect.

Plaiting of rope and string.

A C 283

Both the Ashluslay and the Choroti have some rather peculiar plaited bands, strings, etc. It being impossible to draw any anthropogeographical conclusions from these at present, owing to the lack of comparative material, I would prefer not to deal with them here.

Brush and Broom-making. [a]

There is no work on Indian brooms.[b] As I have already remarked, they are a culture-element which the Indians received from the area of civilization in western S. America.

[1]) Vol. I, p. 271.

[a] [i.e. tassel-making. - Au/rst]

[b] [i.e., tassels. - Au.]